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| 10/822,124      | 04/10/2004  | Yin Liu              |                     | 2468             |

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| EXAMINER |
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| ART UNIT | PAPER NUMBER |
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2873

DATE MAILED: 08/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                          |      |
|------------------------------|-------------------------------|--------------------------|------|
| <b>Office Action Summary</b> | Application No.<br>10/822,124 | Applicant(s)<br>LIU, YIN |      |
|                              | Examiner<br>Brandi N. Thomas  | Art Unit<br>2873         | (RM) |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed on 6/13/05.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>Detailed Action</u> .                  |

## DETAILED ACTION

### *Specification*

1. The specification is objected because of the following informalities: Cross Reference to related applications is not properly set forth. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Robinson et al. (6031657).

Regarding claim 1, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, comprising: a light source (102) that emits collimated light (col. 8, lines 7-9); a reflective imager (30) that angularly modulates the collimated light (col. 8, lines 22-25), said angularly modulated light being turned back through a field lens (112) and focused onto a Schlieren stop (110) plane (col. 8, lines 25-27), said imager (30) comprising a vacuum envelope (34) (col. 7, lines 15-16); a electron-beam controlled mirror (ECM) array (32) mounted in said vacuum envelope (34) (col. 7, lines 14-15), comprising, a transparent substrate (42) (col. 7, lines 22-24); a transparent, electro-conductive layer on said transparent substrate (col. 4, lines 59-63 and col. 7, lines 42-45); a conductive micro-mirror array (41) integrated onto and in electrical contact with said electro-conductive layer that are all held at a reference potential (col. 7, lines

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21-24); a floating-potential dielectric membrane (43) supported by an array of insulating posts (68) above said array of micro-mirrors (col. 7, lines 26-34 and 65-66); and a focusable electron source (44) that emits primary electrons that are accelerated and strike portions of said dielectric membrane (43) above the respective micro-mirrors (41) causing a fixed charge pattern on said membrane (43) (col. 7, lines 29-39), and a field lens (112) that focuses the collimated light component from said ECM array (32) onto said Schlieren stop (110) plane (col. 8, lines 25-27); and a Schlieren stop (110) at said Schlieren stop plane that converts the angularly modulated light into intensity modulated light (col. 8, lines 27-29); and a projection lens (116) that focuses the intensity modulated light onto a viewing screen to form an image (col. 8, lines 29-31).

Regarding claim 2, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, wherein said transparent, electro-conductive layer is an aperture patterned conducting plane (col. 7, lines 42-45 and 53-55).

Regarding claim 3, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, wherein said floating-potential dielectric membrane (43) is a semiconducting membrane (col. 7, lines 27-28 and 58-59).

Regarding claim 4, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, wherein a conductive collector grid array (44) is attached on said dielectric membrane (43) such that it can be held at a collector potential with respect to the mirror voltage (col. 7, lines 30-34).

Regarding claim 5, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, further comprising a color wheel (114) such that the display of color image video is

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carried out by continuously displaying multiple mono-color images in a temporally multiplexed fashion (col. 8, lines 16-21).

Regarding claim 6, Robinson et al. discloses, in figure 5, a projection display, wherein said light is split into a plurality of color components, said projection display comprising the same plurality of said reflective imagers (152a-152c) that spatially modulate the respective color components (col. 9, lines 1-16).

Regarding claim 7, Robinson et al. discloses, in figures 9-11, a projection display, wherein said imager further comprises an array of attractor pads (258a-258d) on said electron source side of said membrane (257) that are aligned with said micro-mirror array (250a-250d), said source writing charge pattern onto said attractor pads (258a-258d) such that each micro-mirror's charge is distributed approximately uniformly across the corresponding attractor pad (258a-258d) (col. 9, lines 63-67 and col. 10, lines 19-32).

Regarding claim 8, Robinson et al. discloses, in figure 3, a projection display, wherein said light source (102) emits infrared components of light for producing infrared image on said screen (120) (col. 8, lines 10-14).

Regarding claim 9, Robinson et al. discloses, in figure 3, a projection display, wherein said light source (102) emits ultraviolet components of light for producing ultraviolet image on said screen (120) (col. 8, lines 6-11).

Regarding claim 10, Robinson et al. discloses, in figures 9-11, a projection display, wherein said micromirror array (250a-250d) is configured with cloverleaf arrays of four centrally joined cantilever beams (250a-250d) that share common post regions (252) on said electro-conductive layer (col. 9, lines 63-67 and col. 10, lines 20-21).

Regarding claim 11, Robinson et al. discloses, in figures 9-11, a projection display, wherein said micromirror array is made of metal (col. 3, lines 11-12).

Regarding claim 12, Robinson et al. discloses a projection display, wherein said micromirror array is made of dielectric material with both side covered with metal (col. 6, lines 10-11).

Regarding claim 13, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, wherein said charge pattern increases the localized membrane potentials so that the potential differences between said membrane (43) and said micromirrors (41) produces the finely-defined attractive electrostatic forces (col. 7, lines 24-31).

Regarding claim 14, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, wherein said charge pattern increases the localized membrane potentials so that the potential differences between said membrane (43) and said micromirrors (41) produces the finely-defined attractive electrostatic forces, said micromirrors being susceptible to snap-over when the potential difference exceeds a threshold potential, said collector grid being biased so that said grid potential is less than said threshold potential (col. 11, lines 10-26).

Regarding claim 15, Robinson et al. discloses, in figures 9-11, a projection display, wherein said imager further comprising an attractor pad array (258a-258d) on the backside of said membrane (257) that are aligned with said cantilever beams (250a-250d) (col. 10, lines 19-21).

Regarding claim 16, Robinson et al. discloses, in figures 9-11, a projection display, wherein said attractor pad array (258a-258d) includes one said attractor pad per cantilever beam (250a-250d) (col. 10, lines 19-21).

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Regarding claim 17, Robinson et al. discloses, in figures 9-11, a projection display, wherein said insulating posts (226) are on said substrate (222) in said common posts regions (252) and formed integrally with said membrane (257) (col. 10, lines 36-43).

### *Response to Arguments*

4. Applicant's arguments filed 6/13/05 have been fully considered but they are not persuasive. Regarding claims 1-3, the collector grid of Robinson et al. performs the same function as the focusable electron source disclosed in the claim (col. 7, lines 26-34 and 65-66); Regarding claims 4, Robinson et al. discloses, in figure 2a, that the collector grid (44) is attached to dielectric membrane (43); Regarding claim 8, Robinson et al. discloses an infrared component of light directed to a screen (col. 8, lines 10-14); Regarding claim 9, Robinson et al. discloses an ultraviolet component of light directed to a screen (col. 8, lines 6-10).

### *Conclusion*

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandi N. Thomas whose telephone number is 571-272-2341. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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BNT

  
RICKY L. MACK  
PRIMARY EXAMINER